

## PATENT ABSTRACTS OF JAPAN

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### (54) VIDEO RECORDER

(57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a video recorder that records a desired video image, even when a broadcast time of the desired video image in a program is not known.

**SOLUTION:** This video recorder that selects a part section of a received video signal and records the selected period signal is provided with a person's portrait image designation means 4, 11, 12 that designate a portrait image, detection means 9, 10 that detect a designated portrait from a received video signal, selection means 3, 8, 19, 18 that select the part section of the video signal based on the detected time of the detection means, and a recording means 2 that records the video signal of the selected part period. A portrait such as that of a commentator appearing in a program is detected from the video signal, and the video recording time is set based on the detected time so as to record a desired video image.

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## CLAIMS

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[Claim(s)]

[Claim 1] In the image recording device of the video signal to input which chooses and records the section in part A face image assignment means to specify a person's face image, and a detection means to detect said specified face image out of the video signal to input, Based on the detection time of day of said detection means, said video signal is the image recording device characterized by having a selection means to choose the section, and a selected record means to record the video signal of the section in part a part.

[Claim 2] The face image database with which said face image assignment means remembers many a person's identifiers and face images to be person name input means to specify a person name, A face field extract means to extract a face field from the video signal which possesses a retrieval means to search a person's face image specified from said person name input means from said face image database, and said detection means inputs, The image recording device according to claim 1 characterized by providing an image comparison means to output a detecting signal when the face image extracted by said face field extract means is compared with the face image searched by said retrieval means and whenever [ those coincidence ] exceeds a criterion.

[Claim 3] In the image recording device of the video signal to input which chooses and records the section in part A detection means to detect the sound signal which utters the specified keyword out of the sound signal included in the video signal inputted as a keyword assignment means to specify a keyword, Based on the detection time of day of said detection means, said video signal is the image recording device

characterized by having a selection means to choose the section, and a selected record means to record the video signal of the section in part a part.

[Claim 4] The image recording device according to claim 3 characterized by providing a speech recognition means to output a detecting signal when said keyword by which said detection means was specified as the word expressed by said sound signal is in agreement.

[Claim 5] a part of video signal input -- a radical [ time of day / of a character string assignment means specify a character string in the image recording device which chooses and records the section, a detection means detect the specified character string out of the video signal input, and said detection means / detection ] -- a part of said video signal -- the selection means choose the section, and the selected part -- the image recording device which characterizes by to have the record means record the video signal of the section.

[Claim 6] The image recording device according to claim 5 characterized by providing a character string comparison means to output a detecting signal when said detection means compares a character string extract means to extract a string area from the inputted video signal with the character string extracted by said character string extract means and the character string specified by said character string assignment means and they are in agreement.

[Claim 7] In the image recording device of the video signal to input which chooses and records the section in part A face image assignment means to specify a person's face image, and a keyword assignment means to specify a keyword, The face image specified by character string assignment means to specify a character string, and the face image assignment means out of the video signal to input, The sound signal which utters the keyword specified by the keyword assignment means, or a detection means to detect at least one or more of the character string \*\*s specified by the character string assignment means, Based on the detection time of day of said detection means, said video signal is the image recording device characterized by having a selection means to choose the section, and a selected record means to record the video signal of the section in part a part.

[Claim 8] A program name assignment means to specify a program name, and a race card input means to input a race card, From the race card memorized by a race card record means to memorize the inputted race card, and said race card record means A time-of-day comparison means to output a time-of-day coincidence signal when the broadcasting hours of the program as which the program name was specified are found and current time is in agreement with said broadcasting hours is provided. For said selection means, said video signal is the image recording device according to claim 1 to 7 characterized by choosing the section a part based on the detection time of day of said detection means a condition [ the time-of-day coincidence signal being outputted from said time-of-day comparison means ].

[Claim 9] The image recording device according to claim 8 with which said race card

input means is characterized by a race card coming to hand through a communication network.

[Claim 10] The image recording device according to claim 8 characterized by providing the logic gate where said selection means outputs the AND of the detecting signal outputted from said detection means, and the time-of-day coincidence signal outputted from said time-of-day comparison means.

[Claim 11] It is the image recording device according to claim 8 or 10 characterized by choosing as the section a part for said selection means to record a video signal for the time amount section when a time-of-day coincidence signal is outputted from said time-of-day comparison means at, and the detecting signal is outputted from said detection means.

[Claim 12] The video signal which should possess a delay means to delay the video signal to input and to output to said record means, and said delay means should record from the input time of a video signal based on the video signal is the image recording device according to claim 1 to 11 with which only time amount equivalent to the duration of the time of the section being chosen is characterized by delaying said video signal a part.

[Claim 13] The image recording device according to claim 1 to 11 characterized by the thing which was chosen by said selection means among the video signals which possessed the record means temporarily record the video signal to input temporarily, and were recorded on the record means temporarily [ said ], and on which said record means records only the video signal of the section in part.

[Claim 14] The image recording device according to claim 13 characterized by the thing on which said selection means should record a video signal for the section which added predetermined time before or after the time amount section when the detecting signal is outputted from said detection means, and for which a part is chosen as the section.

[Claim 15] The image recording device according to claim 13 characterized by the thing on which said selection means should ask for the program currently broadcast when a detecting signal is outputted from said detection means from the race card memorized by said race card record means, and should record a video signal for from the program start time of the program to program end time, and for which a part is chosen as the section.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention makes automatic selection and enables it to record a desired image especially about the image recording device which records the video signal outputted from a television receiver etc.

[0002]

[Description of the Prior Art] Although timer timed recording has spread widely as an approach of carrying out the automatic image transcription of the desired program from television broadcasting, this approach has the fault that it cannot be coped with, when broadcasting hours are changed. Then, in order to improve such a point, the title screen of a program etc. is detected from a television signal, and the image recording device which records automatically a weather report Fig. to time and record time amount on the basis of it, stock information, etc. is considered (JP,5-153539,A).

[0003] The video-signal input section 1 which a video signal inputs as this equipment is shown in drawing 9 . A pilot image registration means 24 to register a title screen etc. as a pilot image, An image transcription timing setting means 25 to set up the time amount from detection of a pilot image to image transcription initiation, The pilot image was detected from the video signal and it has after detection an image comparison means 26 to output image transcription initiation directions after the time amount set up by the image transcription timing setting means 25, and the assignment image recording control means 27 which controls image transcription actuation based on these image transcription initiation directions.

[0004] With this equipment, the title screen of a program is beforehand registered into the pilot image registration means 24 as a pilot image. Moreover, for example, if it is the case where the weather report Fig. of the weather intelligence corner of a news program is recorded on videotape, time amount after the title screen used as a pilot image is displayed until a weather report Fig. is reflected will be set as the image transcription timing setting means 25. It is carried out by manual operation, looking at an actual screen at first, that set point is memorized, and this setup is used for the decision of the image transcription time of day from next time.

[0005] The image comparison means 26 clocks the time amount from the point in time, when the image of a television signal is compared with the registered pilot image and whenever [ those coincidence ] exceeds a criterion. And after the time amount set up by the image transcription timing setting means 25 passes, the command of image transcription initiation is outputted to the assignment image recording control means 27. The assignment image recording control means 27 starts image transcription actuation in response to this command.

[0006] Therefore, in this image recording device, if progress time of day until it registers the initiation title of a program as a pilot image and a weather report Fig. is broadcast from an initiation title for example, is set up as image transcription timing time amount, recording on videotape automatically is possible, always updating the newest weather report Fig., and it can respond also to modification of broadcasting hours.

[0007]

[Problem(s) to be Solved by the Invention] However, in this conventional image recording device, since an image transcription is started by making elapsed time until the image of the request to record after a pilot image is broadcast is broadcast into setups, when the broadcast time of day of a desired image is not fixed in a program, a desired image cannot be recorded.

[0008] This invention does not solve such a conventional trouble, and in the program, even when the broadcast time of day of a desired image is not known, it aims at offering the image recording device which can record a desired image on videotape.

[0009]

[Means for Solving the Problem] So, in the image recording device of this invention, a detection means detect face images, such as an axle-pin rake, or the voice which utters a specific word, and a specific character string out of the video signal to input, and a record means chosen with a selection means of an input video signal to choose the section in part, based on the detection time of day by those detection means record the input video signal of the section in part have been established.

[0010] Therefore, even when the broadcast time of day of a desired image is not known, it becomes possible to record only a desired image on videotape by using as a key the voice or the character string which utters an axle-pin rake's face image and a specific word.

[0011]

[Embodiment of the Invention] In the image recording device of the video signal which inputs invention of this invention according to claim 1 which chooses and records the section in part A face image assignment means to specify a person's face image, and a detection means to detect the specified face image out of the video signal to input, Based on the detection time of day of this detection means, a video signal a part A selection means to choose the section, A desired image is recordable by establishing a selected record means to record the video signal of the section in part, detecting face images, such as an axle-pin rake who appears in a program from a video signal, and setting up image transcription time amount based on the detection time of day.

[0012] A person name input means by which invention according to claim 2 specifies a person name for this face image assignment means, A retrieval means to search a person's face image specified from the person name input means constitutes from the face image database which memorizes many a person's identifiers and face images, and a face image database. A face field extract means to extract a face field from the video signal which inputs a detection means, The face image extracted by the face field extract means is compared with the face image searched by the retrieval means. If it constitutes from an image comparison means to output a detecting signal, for example, a weather report axle-pin rake's identifier is specified from a person name input means, when whenever [ those coincidence ] exceeds a criterion, when the axle-pin rake will appear in an image, a detecting signal is outputted from an image

comparison means.

[0013] In the image recording device of the video signal which inputs invention according to claim 3 which chooses and records the section in part A detection means to detect the sound signal which utters the specified keyword out of the sound signal included in the video signal inputted as a keyword assignment means to specify a keyword, Based on the detection time of day of this detection means, a video signal a part A selection means to choose the section, A selected record means to record the video signal of the section in part is established. A desired image is recordable by a "weather report's" etc. detecting the voice by which the specific word is uttered, and setting up image transcription time amount from the sound signal included in a video signal, based on the detection time of day.

[0014] Invention according to claim 4 can be constituted from a speech recognition means to output a detecting signal, when the keyword specified as the word expressed by the sound signal in this detection means is in agreement, and it can detect the specified keyword from the sound signal included in an input video signal.

[0015] In the image recording device of the video signal which inputs invention according to claim 5 which chooses and records the section in part A character string assignment means to specify a character string, and a detection means to detect the specified character string out of the video signal to input, Based on the detection time of day of this detection means, a video signal a part A selection means to choose the section, A desired image is recordable by establishing a selected record means to record the video signal of the section in part, detecting the character string of a "weather report", for example, and setting up image transcription time amount from an image, based on the detection time of day.

[0016] Invention according to claim 6 can compare a character string extract means extract a string area from the video signal which inputted this detection means with the character string extracted by the character string extract means and the character string specified by the character string assignment means, when they are in agreement, it can constitute it from a character string comparison means output a detecting signal, and it can detect the specified character string from the character string contained in an image.

[0017] In the image recording device of the video signal which inputs invention according to claim 7 which chooses and records the section in part A face image assignment means to specify a person's face image, and a keyword assignment means to specify a keyword, The face image specified by character string assignment means to specify a character string, and the face image assignment means out of the video signal to input, The sound signal which utters the keyword specified by the keyword assignment means, or a detection means to detect at least one or more of the character string \*\*s specified by the character string assignment means, Based on the detection time of day of this detection means, a video signal a part A selection means to choose the section, It becomes possible to record the image for which it

wishes more certainly by establishing a selected record means to record the video signal of the section in part, for example, detecting a video signal combining a face image and a character string.

[0018] A program name assignment means by which invention according to claim 8 specifies a program name, and a race card input means to input a race card, From the race card memorized by a race card record means to memorize the inputted race card, and the race card record means The broadcasting hours of the program as which the program name was specified are found, when current time is in agreement with the broadcasting hours, a time-of-day comparison means to output a time-of-day coincidence signal is established, and it is contingent [ a selection means / on the time-of-day coincidence signal being outputted from the time-of-day comparison means ]. Based on the detection time of day of a detection means, the thing of a video signal for which the section is chosen in part, for example, only the corner of the weather report in a news program is recorded on videotape becomes possible.

[0019] Invention according to claim 9 can always update a race card to the newest thing, even when a race card input means constitutes as come to hand in a race card through a communication network (for example, Internet), and the broadcast schedule of a program is changed.

[0020] Invention according to claim 10 can obtain the time amount section when the logic gate which outputs the AND of the detecting signal outputted from a detection means and the time-of-day coincidence signal outputted from a time-of-day comparison means is established in a selection means at, and a time-of-day coincidence signal is outputted to it from a time-of-day comparison means at, and the detecting signal is outputted to it from the detection means as an output signal of a logic gate.

[0021] As for invention according to claim 11, a time-of-day coincidence signal is outputted for a selection means from a time-of-day comparison means. The time amount section when the detecting signal is outputted from the detection means is chosen as the section in part, in order to record a video signal. And in a program Only an image when the image when the image when the axle-pin rake who specified has appeared, or the specified keyword is uttered, or the specified character string is displayed is chosen and recorded.

[0022] Invention according to claim 12 establishes a delay means to delay the video signal to input and to output to a record means. Only the time amount equivalent to the duration of the video signal which this delay means is based on that video signal, and should record from the input time of a video signal which it is a part until the section is chosen is constituted so that a video signal may be delayed. By this Even if it is the case where comparison processing of a face image etc. takes time amount, a desired image can be recorded without being missing from an initiation part.

[0023] Invention according to claim 13 establishes a record means temporarily record the video signal to input temporarily, and only the video signal of the section records



on a record means, and, thereby, it becomes possible [ choosing and recording the image which was chosen by the selection means among the video signals recorded on the record means temporarily and which was inputted before the detection time of day of a detection means ] in part.

[0024] Invention according to claim 14 can record on videotape the section when the selection means added predetermined time before or after the time amount section when the detecting signal is outputted from the detection means for a video signal including time amount when [ which should be recorded ] it constitutes so that a part may be chosen as the section, and this records a desired image by using a face image, voice, or a character string as a key, before and after detecting the key.

[0025] Invention according to claim 15 searches for the program it is broadcast that a selection means is when a detecting signal is outputted from a detection means from the race card memorized by the race card record means, and it constitutes so that a part may be chosen as the section, and it becomes possible [ that this records the whole program including a desired image which should record a video signal for from the program start time of the program to program end time ].

[0026] Hereafter, the gestalt of operation of this invention is explained using a drawing.

[0027] (Gestalt of the 1st operation) The image recording device of the 1st operation gestalt detects the face of the person who is appearing on the program from the video signal, and records a desired image based on it.

[0028] The video-signal input section 1 which a video signal inputs from a television receiver etc. as this image recording apparatus is shown in drawing 1 , The image transcription information input section 4 which inputs the program name of the image recorded on videotape, and the person name for retrieval, The race card input section 5 which inputs initiation and end time of a race card, i.e., the program name of a program, and broadcast, The race card recorded on the race card Records Department 6 which records the inputted race card, and the program name inputted from the image transcription information input section 4 and the race card Records Department 6 is used. A time-of-day comparison means 7 to detect whether it is the broadcast time zone of a program when current time of day was inputted, and to output a time-of-day coincidence signal, The face field extract section 9 which extracts a person's face field and outputs the extracted image data out of the image of the inputted video signal, The face image database 11 which records many a person's face image data and its person name, An image retrieval means 12 to search and output a person's face image data inputted from the image transcription information input section 4 from the face image database 11, An image comparison means 10 to output an image coincidence signal when the image data inputted from each of the face field extract section 9 and the image retrieval means 12 is compared and whenever [ coincidence ] exceeds a criterion, The logic gate 8 which outputs the value of the AND of the input signal from the image comparison means 10 and the

time-of-day comparison means 7, the time check which measures required image transcription time of day based on the output signal of a logic gate 8 -- with a means 19 the 2nd image Records Department 17 which records the video signal to input temporarily, and a time check -- with the 2nd image Records Department control section 18 which controls record / playback actuation of the 2nd image Records Department 17 based on the time of day measured with the means 19 the image Records Department 2 which records the image reproduced at the 2nd image Records Department 17, and a time check -- it has the image Records Department control section 3 which controls record / playback actuation of the image Records Department 2 based on the time of day measured with the means 19.

[0029] With this equipment, the image retrieval means 12 searches a person's face image inputted from the image transcription information input section 4 from the face image database 11 based on the person name data recorded on the database, and outputs the face image data corresponding to conditions to the image comparison means 10.

[0030] On the other hand, while the video signal inputted into the video-signal input section 1 is recorded on the 2nd image Records Department 17 temporarily, the part inputs into the face field extract section 9, and the face field extract section 9 extracts a person's face field part contained in a video signal, and outputs face image data to the image comparison means 10.

[0031] The image comparison means 10 compares the face image data inputted from the face image data inputted from the face field extract section 9, and the image retrieval means 12, and when whenever [ coincidence ] exceeds a criterion, it outputs an image coincidence signal to a logic gate 8.

[0032] In addition, the technique of extracting a person's face field part contained in a video signal is well-known, for example, is shown in the 2nd image sensing symposium lecture collection, A-1, pp.1-6, "application of color information, the face image extract using GA, and individual collating", etc. Moreover, the technique of comparing two face image data is also shown in the Institute of Electronics, Information and Communication Engineers paper magazine, D-2, Vol.J76-D-2, No.6, pp.1132-1139, "recognition of a mosaic and the face image using a neural network" (June, 1993), etc. Moreover, using a face image for individual collating is shown in Japanese Patent Application No. 8-170866, Japanese Patent Application No. 8-86171, etc. using such a technique. In the equipment of this operation gestalt, although it is possible to use these techniques so, it is not limited.

[0033] Moreover, race card data including the information on the program name and broadcast time of day which were inputted from the race card input section 5 are stored in the race card Records Department 6. The time-of-day comparison means 7 detects whether it is the broadcast time zone of a program when it was inputted at and the present time of day was registered with reference to the data of the race card Records Department 6 based on the registered program name and current time

of day from the image transcription information input section 4, and when it is a broadcast time zone, it outputs a time-of-day coincidence signal.

[0034] and the logic gate 8 — the AND of an image coincidence signal and a time-of-day coincidence signal — a time check — it outputs to a means 19.

[0035] Now, as shown in drawing 2 (a), axle-pin rakes A, B, and C, and A and C appear in order into a program, and the case where the corner of a program is taken charge of is explained.

[0036] In the input video signal, the face image of each characters (A-C) is contained in the time zone shown in drawing 2 (a). If it is inputted from the image transcription information input section 4 and the registered person sets to B, from a logic gate 8, a signal will be outputted only for during the time of day of t1 to t2 when Person B appears into an image.

[0037] a time check — a means 18 computes  $t3=t1-\text{deltat}$  and  $t4=t2+\text{deltat}$  from the signal output of a logic gate 8 from the value of the time amount section (deltat) which measured time of day t1 and time of day t2, and was set up beforehand, and outputs them to the 2nd image Records Department control section 18 and image Records Department control section 3.

[0038] The 2nd image Records Department control section 18 controls the video signal inputted from the video-signal input section 1 to always record on the 2nd image Records Department 17. and a time check — if the signal which shows the time amount section of t3 and t4 is received from a means 19, the image which the 2nd image Records Department 17 recorded on the time amount partition will be controlled to output to the image Records Department 2.

[0039] The image Records Department control section 3 is controlled so that the image Records Department 2 records the video signal outputted from this 2nd video-signal Records Department 17.

[0040] In this way, as shown in drawing 2 (b), the image (image from time of day t3 to time of day t4) in the time amount to which Person B appears in an image, and fixed time amount before and behind that is recorded on the image Records Department 2.

[0041] In addition, it is also possible to set it as a value different, respectively from the time amount section (deltat1) before Person B appears into an image, and the time amount section (deltat2) after Person B appears.

[0042] therefore — for example, — the case where tomorrow [ a synoptic weather chart or ] forecast be display to a fixed schedule like a weather intelligence corner after the weather axle-pin rake appear in a screen — the image transcription information input section 4 to the weather axle-pin rake name — register — a time check — even when the weather intelligence corner be broadcast in what kind of time zone in a program by set the predetermined time amount section as a means 19, the image can be record certainly.

[0043] Thus, in the image recording device of this operation gestalt, after specifying the person who appears in a program and detecting that person in an image, only

desired programs, such as weather information, a news program, etc. by which television televising is carried out, are certainly recordable by setting up the time interval to image transcription initiation / termination.

[0044] (Gestalt of the 2nd operation) The image recording device of the 2nd operation gestalt records only the image in which the specific person has appeared.

[0045] With the image Records Department 2 which records only a desired image out of the video signal inputted from the video-signal input section 1 as this equipment is shown in drawing 3 It has the image Records Department control section 3 which controls the image Records Department 2 so that only the period when the signal is outputted from the logic gate 8 records an image. Like the 1st operation gestalt It has the image transcription information input section 4, the race card input section 5, the race card Records Department 6, the time-of-day comparison means 7, the face image database 11, the image retrieval means 12, and the image comparison means 10.

[0046] The face image data which the image comparison means 10 inputs like the 1st operation gestalt with this equipment from the face image data inputted from the face field extract section 9 and the image retrieval means 12 is compared. When whenever [ coincidence ] exceeds a criterion, an image coincidence signal is outputted to a logic gate 8, and the time-of-day comparison means 7 outputs a time-of-day coincidence signal to a logic gate 8, when the present time of day is the broadcast time zone of the program inputted from the image transcription information input section 4. And a logic gate 8 outputs the AND of an image coincidence signal and a time-of-day coincidence signal to the image Records Department control section 3.

[0047] The image Records Department control section 3 is controlled to record the video signal to input to the image Records Department 2, only while the signal is outputted from this logic gate 8.

[0048] In this way, only the image in which the person who specified has appeared in the program which inputted the program name from the image transcription information input section 4 is recorded on the image Records Department 2.

[0049] Thus, in the image recording device of this operation gestalt, the person who appears in a program can be specified and only the image in which that person has appeared can be recorded. Therefore, this equipment can also meet the demand of the information corner where an axle-pin rake's face image has always appeared on the screen being recorded on videotape with this equipment, and wanting to record on videotape only the appearance screen of the pop singer who appears into a program.

[0050] Moreover, it can check easily by recording automatically only the image in which the characters of those commercials have appeared [ whether the commercials of the company which sponsors the program were broadcast, and ] using this equipment.

[0051] (Gestalt of the 3rd operation) The image recording device of the 3rd operation gestalt can record certainly all the images in which the person appears, even when detection of the person in an image takes time amount.

[0052] This equipment is equipped with the delay circuit 16 which the video signal inputted from the video-signal input section 1 is delayed, and is outputted to the image Records Department 2 as shown in drawing 4 . Other configurations do not have the 2nd operation gestalt ( drawing 3 ) and a change.

[0053] The time delay by the delay circuit 16 is set up so that it may become equal to time amount after the video signal containing the face image which should be detected inputs into the face field extract section 9 until the control signal of a recording start is outputted from the image Records Department control section 3.

[0054] With this equipment, the video signal inputted from the video-signal input section 1 is delayed in a delay circuit 16, and inputs into the image Records Department 2, and a part of branched input video signal inputs into the face field extract section 9. As the 2nd operation gestalt explained, the face field extract section 9 extracts face image data, and outputs it to the image comparison means 10. The image comparison means 10 When the face image data inputted from the face image data and the image retrieval means 12 is compared and whenever

[ coincidence ] exceeds a criterion, an image coincidence signal is outputted to a logic gate 8. A logic gate 8 An AND with the time-of-day coincidence signal inputted from the image coincidence signal inputted from the image comparison means 10 and the time-of-day comparison means 7 is outputted to the image Records Department control section 3. Only while the signal is outputted from this logic gate 8, the image Records Department control section 3 outputs a control signal so that the video signal to input may be recorded to the image Records Department 2.

[0055] When a control signal will be outputted so that the video signal may input into the face field extract section 9, may carry out predetermined time progress and a video signal may be recorded on the image Records Department 2 from the image Records Department control section 3 if the face image which should be now detected to the video signal to input shall be contained, the video signal containing the face image is delayed in a delay circuit 16, and is exactly inputted into the image Records Department 2. Therefore, at the image Records Department 2, it can leak and the image in which the face image appears can be recorded that there is nothing.

[0056] Thus, in the image recording device of this operation gestalt, by inserting a delay circuit in the 2nd operation gestalt, even when the time delay of image comparison means 10 grade is large, it becomes possible from the initiation time of a desired image to record an image on videotape.

[0057] (4th operation gestalt) The image recording device of the 4th operation gestalt records the image from initiation of the program in which the person who specifies appears to termination.

[0058] The image transcription information input section 4 into which this equipment inputs the person name for retrieval as shown in drawing 5 , With the race card input section 5 which inputs a race card, and the race card Records Department 6 which records the inputted race card The face image database 11 which records the face

field extract section 9 which extracts a face field out of the image of a video signal, and many a person's face image data and its person name, An image retrieval means 12 to search a person's face image data inputted from the image transcription information input section 4 from the face image database 11, An image comparison means 10 to output an image coincidence signal when the image data inputted from each of the face field extract section 9 and the image retrieval means 12 is compared and whenever [ coincidence ] exceeds a criterion, A broadcast time-of-day detection means 20 to detect the 2nd image Records Department 17 which records the video signal to input temporarily, and the start time and end time of the program currently broadcast at the time of day when the image coincidence signal was outputted from the image comparison means 10 from the race card recorded on the race card Records Department 6, The 2nd image Records Department control section 18 controlled to output the record from the start time of a program when the broadcast time-of-day detection means 20 detected the video signal to input to the 2nd image Records Department 17 recorded temporarily and the 2nd image Records Department 17 to end time, It has the image Records Department 2 which records the image outputted from the 2nd image Records Department 17, and the image Records Department control section 3 which controls record and a rebirth of the image Records Department 2.

[0059] With this equipment, the video signal inputted into the video-signal input section 1 dichotomizes, and inputs into the 2nd image Records Department 17 and the face field extract section 9, and the face field extract section 9 extracts face image data from a video signal, and outputs it to the image comparison means 10.

[0060] Moreover, the image retrieval means 12 searches a person's face image inputted from the image transcription information input section 4 from the face image database 11, and outputs the face image data corresponding to conditions to the image comparison means 10.

[0061] The image comparison means 10 outputs an image coincidence signal to the broadcast time-of-day detection means 20, when the face image data inputted from the face image data inputted from the face field extract section 9 and the image retrieval means 12 is compared and whenever [ coincidence ] exceeds a criterion.

[0062] If an image coincidence signal is received from the image comparison means 10, the broadcast time-of-day detection means 20 will detect the start time and end time of a program which are broadcast at the time of day based on the race card recorded on the race card Records Department 6, and will output a transfer-request signal to the 2nd image Records Department control section 18 and image Records Department control section 3.

[0063] The 2nd image Records Department control section 18 is controlled to always record the inputted video signal on the 2nd image Records Department 17. Moreover, the 2nd image Records Department control section 18 will be controlled to output the image which the 2nd image recording device 17 recorded on the time amount section

from program start time to program end time, if a transfer-request signal is received from the broadcast time-of-day detection means 10. The image Records Department control section 3 is controlled so that the image Records Department 2 records the video signal outputted from the 2nd video-signal Records Department 17.

[0064] In this way, the image from initiation of the program in which the specified person appears to termination is recorded on the image Records Department 2.

[0065] Thus, in the image recording device of this operation gestalt, the whole program in which a person is specified and that person appears is recordable.

[0066] (5th operation gestalt) In the 4th operation gestalt, the image recording device of the 5th operation gestalt is constituted so that the start time and end time of a program can be determined based on the newest race card.

[0067] As this equipment is shown in drawing 6, the race card input section 5 consists of the communication interface 22 which connects the communication networks 21, such as the Internet, a race card input means 23 by which a television race card comes to hand through a communication network 21, and a communication network 21 and the race card input means 23. Other configurations do not have the 4th operation gestalt ( drawing 5 ) and a change.

[0068] The equipment terminal holding the newest television race card is connected to this communication network 21, and it connects with a communication network 21 through a communication interface 22 for every fixed spacing, and the program input means 23 receives a television race card from this equipment terminal, and records it on the race card Records Department 6.

[0069] Therefore, in the image recording apparatus of this operation gestalt, since it can always have the newest data as a television race card, even when the broadcasting hours of a program are changed, a desired program can be recorded corresponding to it.

[0070] (6th operation gestalt) The image recording device of the 6th operation gestalt recognizes the voice contained in a video signal, and records a desired image based on it.

[0071] The video-signal input section 1 into which a video signal including a sound signal inputs this equipment as shown in drawing 7, The image transcription information input section 4 which inputs the program name and keyword of an image which are recorded on videotape, With the race card input section 5 which inputs a race card, and the race card Records Department 6 which records the inputted race card A time-of-day comparison means 7 by which current time detects whether it is the broadcast time zone of the program of the inputted identifier, and outputs a time-of-day coincidence signal using the program name inputted from the image transcription information input section 4, and the race card recorded on the race card Records Department 6, A speech recognition means 13 to perform matching with the keyword inputted from the sound signal and the image transcription information input section 4 which are contained in a video signal, and to output a voice coincidence

signal when in agreement, The logic gate 8 which outputs the value of the AND of the input signal from the speech recognition means 13 and the time-of-day comparison means 7, It has the image Records Department 2 which records only a desired image out of the video signal inputted from the video-signal input section 1, and the image Records Department control section 3 which controls the image Records Department 2 so that only the period when the signal is outputted from the logic gate 8 records an image.

[0072] With this equipment, the keyword "tomorrow's weather" is inputted and registered from the image transcription information input section 4.

[0073] The video signal inputted into the video-signal input section 1 dichotomizes, and is inputted into the image Records Department 2 and the speech recognition means 13. The speech recognition means 13 outputs a voice coincidence signal, when the voice which takes and inputs matching with the keyword inputted from a sound signal and the image transcription information input section 4 has uttered the word which is in agreement with the "tomorrow's weather" which is a keyword.

[0074] Moreover, the time-of-day comparison means 7 detects whether it is the broadcast time zone of a program when it was inputted at and the present time of day was registered with reference to the data of the race card Records Department 6 based on the registered program name and current time of day from the image transcription information input section 4, and when it is a broadcast time zone, it outputs a time-of-day coincidence signal.

[0075] As for the voice coincidence signal from the speech recognition means 13, and the time-of-day coincidence signal from the time-of-day comparison means 7, only the period which inputs into a logic gate 8 and a voice coincidence signal and a time-of-day coincidence signal input into coincidence outputs a signal, as for a logic gate 8. The image Records Department control section 3 is controlled so that only the period when the signal is outputted from the logic gate 8 records the video signal inputted from the video-signal input section 1 to the image Records Department 2.

[0076] In this way, only the image displayed with the narration "tomorrow's weather" will be recorded on the image Records Department 2.

[0077] Thus, it is possible to record only a desired image part on videotape by making voice into a keyword in the image recording device of this operation gestalt.

[0078] Moreover, when investigating whether the commercials of the company which sponsors the program were broadcast, it can check easily by recording automatically only an image when the trade name of commercials is made into a keyword and the voice output of that trade name is carried out using this equipment.

[0079] Moreover, the configuration of the 1st operation gestalt is taken in to the image recording device of this operation gestalt, and an image transcription can be started from the image in front of predetermined time from the time of a keyword being detected, and it can also be made to function as ending an image transcription after predetermined time from that time.



[0080] Moreover, even when the configuration (delay circuit) of the 3rd operation gestalt is taken in and speech recognition etc. takes time amount, it is able to enable it to record exactly on videotape the image in which the voice which is in agreement with a keyword is contained.

[0081] Moreover, the configuration of the 4th and 5th operation gestalten can be taken in, and it can also be made to function as recording the image of the whole program in which the keyword was detected.

[0082] moreover, the 1- when the target person's face image is not registered into an image database combining the equipment of the 5th operation gestalt, it is also possible to constitute so that only a desired image part can be recorded on videotape based on a keyword.

[0083] (7th operation gestalt) The image recording device of the 7th operation gestalt recognizes the alphabetic character contained in an image, and records a desired image based on it.

[0084] As shown in drawing 8, this equipment is equipped with the image transcription information input section 4 which inputs and registers the program name and the keyword which records on videotape, and a character string comparison means 15 output a character string coincidence signal when the string area extract section 14 which extracts the string area in the image of input video signals, such as an alphabetic character contained in the telop inserted by the news program, and the registered keyword and the extracted character string are in agreement. Other configurations do not have the 6th operation gestalt ( drawing 7 ) and a change.

[0085] With this equipment, the video signal inputted into the video-signal input section 1 dichotomizes, and it inputs into the image Records Department 2 and the string area extract section 14. The string area extract section 14 extracts the string area included in the inputted video signal. It detects whether the character string extracted in the string area extract section 14 and the keyword of the character string comparison means 15 registered in the image transcription information input section 4 correspond, and when in agreement, a character string coincidence signal is outputted.

[0086] A character string coincidence signal is inputted into a logic gate 8, and only the period when the time-of-day comparison means 7 to this character string coincidence signal and a time-of-day coincidence signal input a logic gate 8 into coincidence outputs a signal. The image Records Department control section 3 is controlled so that only the period when the signal is outputted from the logic gate 8 records the video signal inputted from the video-signal input section 1 to the image Records Department 2.

[0087] In this way, only the image containing the character string of a keyword will be recorded on the image Records Department 2.

[0088] Thus, it is possible to record only a desired image part on videotape by making into a keyword the character string contained in an image in the image recording

device of this operation gestalt.

[0089] Only the stock quotations of a specific company name can be recorded on videotape out of the program which broadcasts stock quotations, using this equipment.

[0090] Moreover, when investigating whether the commercials of the company which sponsors the program were broadcast, it can check easily by making the trade name and company name of commercials into a keyword, and recording only the image containing that keyword automatically using this equipment.

[0091] Moreover, the configuration of the 1st operation gestalt is taken in to the image recording device of this operation gestalt, and an image transcription can be started from the image in front of predetermined time from the time of a keyword being detected, and it can also be made to function as ending an image transcription after predetermined time from that time.

[0092] Moreover, even when the configuration (delay circuit) of the 3rd operation gestalt is taken in and character recognition etc. takes time amount, it is able to enable it to record exactly on videotape the image in which the character string which is in agreement with a keyword is contained.

[0093] Moreover, the configuration of the 4th and 5th operation gestalten can be taken in, and it can also be made to function as recording the image of the whole program in which the keyword was detected.

[0094] moreover, the 1- when recording only a desired image part on videotape combining the equipment of the 6th operation gestalt, it can also constitute so that either a person's face image, voice or a character string may be chosen as a key, and it becomes possible by carrying out like this to record the image for which it wishes more certainly.

[0095]

[Effect of the Invention] The image recording device of this invention can use as a key the voice and the character string which are contained in the face image of the person who appears in an image, or a video signal, and can record only the image of the request in a program so that clearly from the above explanation. Therefore, even if it does not know in which time zone in a program the image will be broadcast, it is possible to record a desired image.

[0096] Moreover, with the equipment which prepared the delay circuit between the image input section and the image Records Department, it becomes possible from the initiation time of a desired image to record an image.

[0097] Moreover, with the equipment which prepared the 2nd image Records Department which records an image temporarily between the image input section and the image Records Department, the voice and the character string which are contained in the face image of characters or a video signal are used as a key, the image of the predetermined time amount section can be recorded, or the whole program in which the key appears can be recorded.

[0098] Moreover, since the newest race card can be obtained through a

communication network with the equipment which established a means by which a race card came to hand through a communication network, even when the broadcasting hours of a program are changed, it is possible to record a desired image.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] The outline block diagram of the image recording device in the 1st operation gestalt of this invention,

[Drawing 2] Drawing showing the time relation of the input video signal in the 1st operation gestalt of this invention, and the image transmitted to the image Records Department from the 2nd image Records Department,

[Drawing 3] The outline block diagram of the image recording device in the 2nd operation gestalt of this invention,

[Drawing 4] The outline block diagram of the image recording device in the 3rd operation gestalt of this invention,

[Drawing 5] The outline block diagram of the image recording device in the 4th operation gestalt of this invention,

[Drawing 6] The outline block diagram of the image recording device in the 5th operation gestalt of this invention,

[Drawing 7] The outline block diagram of the image recording device in the 6th operation gestalt of this invention,

[Drawing 8] The outline block diagram of the image recording device in the 7th operation gestalt of this invention,

[Drawing 9] It is the outline block diagram of the conventional television signal recording device.

### [Description of Notations]

- 1 Video-Signal Input Section
- 2 Image Records Department
- 3 Image Records Department Control Section
- 4 Recording Information Input Section
- 5 Race Card Input Section
- 6 Race Card Records Department
- 7 Time-of-Day Comparison Means
- 8 Logic Gate
- 9 Face Field Extract Section
- 10 Image Comparison Means
- 11 Face Image Database

12 Image Retrieval Means  
13 Speech Recognition Means  
14 String Area Extract Section  
15 Character String Comparison Means  
16 Delay Circuit  
17 2nd Image Records Department  
18 2nd Image Records Department Control Section  
19 Time Check -- Means  
20 Broadcast Time-of-Day Detection Means  
21 Communication Network  
22 Communication Interface  
23 Race Card Input Means  
24 Pilot Image Registration Means  
25 Image Transcription Timing Setting Means  
26 Image Comparison Means  
27 Assignment Image Recording Control Means

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